

2018 MONTANA MEDICAL EXAMINER'S REPORT

June 30, 2019



OVERVIEW:

The Montana Medical Examiner's Office (MEO) is a bureau within the Montana Department of Justice, Forensic Science Division. It was created in the 1980s to provide death investigation resources for county coroners, law enforcement agencies, and county attorneys on behalf of Montana's citizens. Montana is the fourth largest state in the United States, encompassing 147,040 square miles, and has an estimated population of 1,050,493 for 2017. This report summarizes the statistical results of the MEO cases performed during the 2018 calendar year.

OUR VISION STATEMENT:

We strive to create a partnership between Medical Examiners and Coroners to promote the health, well-being and safety of the citizens of Montana through education, service, and compassionate, professional death investigation.

RECENT PROJECTS COMPLETED:

The Montana Medical Examiner's office recently completed the following projects and goals:

- Establishment of a new morgue facility in Billings as of January 2019
- Acquired an additional forensic pathologist for the Billings office, which was effective March 2019

CURRENT PROJECTS:

The Montana Medical Examiner's office is currently focused on the following projects and goals:

- Upgrade the Missoula facility with new autopsy sink stations and increased body storage capacity with an NIJ grant
- Actively promote opportunities to continuously improve death investigation and establish more uniform practices among the counties, including the implementation of a statewide death investigation database
- Develop, implement and revise standard operating procedures to follow National Association of Medical Examiner Association guidelines for death investigations
- Become accredited through NAME

SUMMARY OF 2018:

In 2018 the Montana Medical Examiner's Office employed three forensic pathologists, two autopsy assistants, and three part-time autopsy assistants. Administrative support was provided by the Forensic Science Division. Two pathologists work at the State crime laboratory in Missoula to serve the needs of coroners in western Montana. One pathologist worked out of St.

Vincent Hospital in Billings to serve the needs of coroners in Eastern Montana, but now as of report date is situated in a new State facility. During calendar year 2018 a total of 612 postmortem examinations were performed (Missoula 338, Billings 274). Our pathologists responded to a limited number of scene investigations and recoveries. We provided court testimony, and made educational presentations at the annual Montana Coroner Advanced and Basic Coroner trainings. Informational meetings took place with coroners, law enforcement, county attorneys, organ and tissue procurement agencies, and funeral directors.

Based on recommendations that appear in the Scientific Working Group on Medicolegal Death Investigation (SWGMDI) "an autopsy rate of one per 1000 population might be considered as a best-case scenario formula for ensuring that medicolegal autopsies are performed in numbers that need public health, public safety, justice system, medical quality assurance and other needs." Generally, the need for a postmortem examination (autopsy) in Montana is determined by the county coroner per Title 46, Chapter 4, Part 1 of Montana Code Annotated. NAME inspection data for all offices published in the SWGMDI 2013 report listed an average autopsy rate of 0.5 per 1,000 persons for offices of all types and 0.7 per 1,000 persons in facility surveys. Utilizing our current data the autopsy rate per 1,000 population in Montana is 5.6% across all counties. Some counties meet or exceed the 1.0 per 1,000 population recommendations while some counties are below the recommendations. Results by county are listed in Total Autopsies by County table beginning on page 3.

Montana death investigations are served through a county coroner system with support by the State Medical Examiner's office. The following statistical information represents only those cases that coroners delivered for autopsy or examination and cannot encompass all deaths in the State. At the discretion of county coroners, selected suicides, overdoses, traffic fatalities, and well-established natural deaths are not submitted for autopsy.

2018 AUTOPSY CASE STATISTICS:

2018 AUTOPSIES BY TYPE		
AUTOPSY TYPE	COUNT	% OF TOTAL
Full	546	89%
Partial	18	3%
External	37	6%
Skeletal	8	1%
Brain Removal/Research	2	<1%
Coroner Case Review	1	<1%
Grand Total	612	100%

TOTAL AUTOPSIES BY COUNTY:

Montana consists of 56 counties. Approximately 2/3 of the population resides in the western half of the State, which is served by the Missoula office. The eastern half contains the State's largest city, Billings, with a city population of 111,150 (2017.) Vital Statistics does not yet have population and death statistics for 2018.

County	2018 Autopsy Count	2017 Autopsy Count	2018 vs 2017 Autopsies	2017 % of Total Autopsies	Number of Deaths 2017*	2017 Autopsies % of Total Deaths	Population (2017)*	2017 Deaths % of Total County Population
Beaverhead	2	3	-1	0.5%	99	3.0%	9434	1.0%
Big Horn	20	21	-1	3.7%	134	15.7%	13360	1.0%
Blaine	2	2	0	0.3%	63	3.2%	6708	0.9%
Broadwater	3	9	-6	1.6%	62	14.5%	5936	1.0%
Butte/SB	21	18	3	3.1%	418	4.3%	34602	1.2%
Carbon	13	7	6	1.2%	105	6.7%	10696	1.0%
Carter	0	3	-3	0.5%	19	15.8%	1222	1.6%
Cascade	34	23	11	4.0%	938	2.5%	81654	1.1%
Chouteau	2	0	2	0.0%	66	0.0%	5765	1.1%
Custer	1	2	-1	0.3%	129	1.6%	11721	1.1%
Daniels	2	2	0	0.3%	25	8.0%	1737	1.4%
Dawson	2	7	-5	1.2%	102	6.9%	8950	1.1%
Deer Lodge	7	8	-1	1.4%	114	7.0%	9106	1.3%
Fallon	2	0	2	0.0%	34	0.0%	3009	1.1%
Fergus	6	10	-4	1.7%	176	5.7%	11291	1.6%
Flathead	40	29	11	5.0%	922	3.1%	100000	0.9%
Gallatin	31	37	-6	6.4%	560	6.6%	107810	0.5%
Garfield	1	0	1	0.0%	16	0.0%	1293	1.2%
Glacier	21	19	2	3.3%	181	10.5%	13640	1.3%
Golden Valley	1	2	-1	0.3%	6	33.3%	822	0.7%
Granite	4	1	3	0.2%	37	2.7%	3358	1.1%
Hill	4	6	-2	1.0%	152	3.9%	16463	0.9%
Jefferson	5	4	1	0.7%	102	3.9%	11891	0.9%
Judith Basin	1	1	0	0.2%	14	7.1%	1961	0.7%
Lake	32	40	-8	7.0%	322	12.4%	30273	1.1%
Lewis & Clark	40	35	5	6.1%	660	5.3%	67773	1.0%
Liberty	1	1	0	0.2%	17	5.9%	2427	0.7%
Lincoln	2	4	-2	0.7%	242	1.7%	19440	1.2%
Madison	3	2	1	0.3%	84	2.4%	1718	4.9%
McCone	2	0	2	0.0%	25	0.0%	8175	0.3%

Meagher	2	1	1	0.2%	22	4.5%	1851	1.2%
Mineral	2	2	0	0.3%	46	4.3%	4255	1.1%
Missoula	63	64	-1	11.1%	910	7.0%	117441	0.8%
Musselshell	8	4	4	0.7%	64	6.3%	4639	1.4%
Park	10	3	7	0.5%	151	2.0%	16353	0.9%
Petroleum	0	2	-2	0.3%	**	0.0%	523	0.0%
Phillips	5	4	1	0.7%	45	8.9%	4119	1.1%
Pondera	3	1	2	0.2%	80	1.3%	5960	1.3%
Powder River	1	0	1	0.0%	20	0.0%	1752	1.1%
Powell	4	1	3	0.2%	73	1.4%	6795	1.1%
Prairie	0	1	-1	0.2%	18	5.6%	1109	1.6%
Ravalli	26	25	1	4.3%	458	5.5%	42563	1.1%
Richland	2	7	-5	1.2%	100	7.0%	11039	0.9%
Roosevelt	9	12	-3	2.1%	124	9.7%	11098	1.1%
Rosebud	10	6	4	1.0%	96	6.3%	9248	1.0%
Sanders	3	4	-1	0.7%	160	2.5%	11711	1.4%
Sheridan	1	4	-3	0.7%	42	9.5%	3469	1.2%
Stillwater	8	4	4	0.7%	90	4.4%	9419	1.0%
Sweet Grass	3	4	-1	0.7%	32	12.5%	3691	0.9%
Teton	4	1	3	0.2%	70	1.4%	6085	1.2%
Toole	1	0	1	0.0%	45	0.0%	4886	0.9%
Treasure	0	1	-1	0.2%	11	9.1%	679	1.6%
Valley	2	4	-2	0.7%	85	4.7%	7433	1.1%
Wheatland	2	2	0	0.3%	36	5.6%	2140	1.7%
Wibaux	0	0	0	0.0%	14	0.0%	1020	1.4%
Yellowstone	138	122	16	21.2%	1572	7.8%	158980	1.0%
Grand Total	612	575	37	100%	10188	5.6%	1,050,493	1.0%

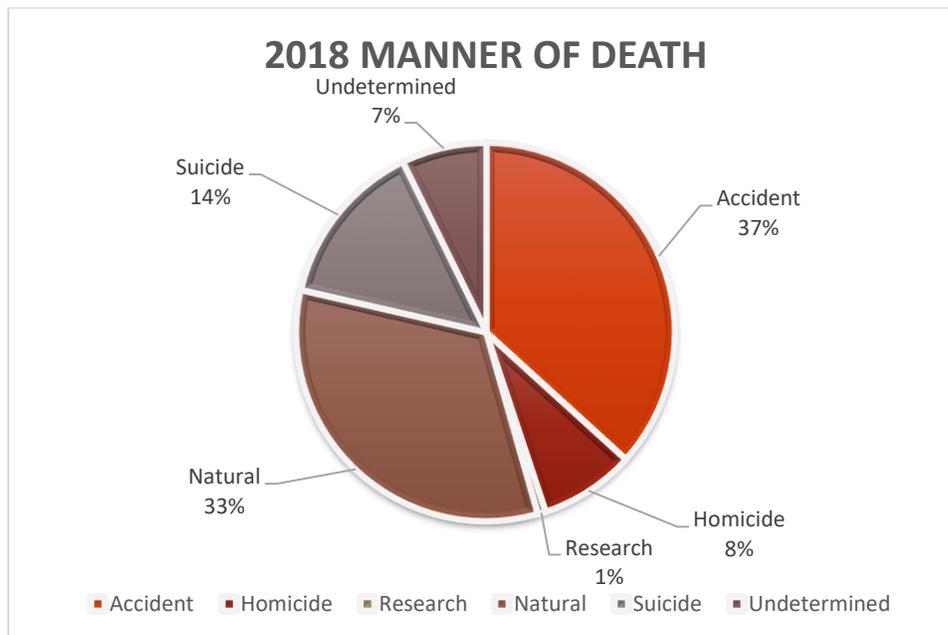
*Source: Montana Vital Records, most recent confirmed numbers

MANNER OF DEATH:

Manner is used to distinguish whether a death is considered natural or unnatural. If deemed unnatural, the death is typically categorized as either accident, suicide, homicide, or in the absence of a clear result, undetermined.

2018 AUTOPSIES MANNER OF DEATH		
MANNER	COUNT	% OF TOTAL
Accident	225	37%
Homicide	50	8%
Research*	4	1%
Natural	202	33%
Suicide	87	14%
Undetermined	44	7%
Grand Total	612	100%

*Manner of death not to be determined in these cases



GENDER:

GENDER	COUNT	% OF TOTAL
female	207	34%
male	398	65%
Non-Human	2	<1%
Unknown	5	1%
Grand Total	612	100%

2018 MANNER BY GENDER			
MANNER	MALE	FEMALE	UNKNOWN
Accident	154	71	
Homicide	27	22	1
Research*	2		2
Natural	127	75	
Suicide	60	27	
Undetermined	28	12	4
Grand Total	398	207	7
% of Total	65%	34%	1%

*Manner of death not to be determined in these cases

ANCESTRY:

Montana is populated by people of primarily Caucasian ancestry. According to Montana's Census and Economic Information Center, in 2017 Caucasians represented 88% of the population, Native Americans 7.3%, Hispanics 3.7%, Asian/Pacific Islanders .1% and Black/African Americans .1%.

As observed in the 2018 statistics below, Non-Caucasian citizens accounted for 32% of homicides, 17% of autopsied suicides, 17% of autopsied accidents, and 15% of autopsied overdoses. In addition, and significantly, for deaths of children under 20 years, Non-Caucasians represented 37% of the total cases.

Ancestry	# of Cases	% of Total
Black	4	1%
Caucasian	498	81%
Hispanic	9	1%
Hispanic/Native American	2	<1%
Indeterminate	6	1%
Mixed	4	1%
Native American	86	14%
Pacific Islander	1	<1%
Non-human	2	<1%
Grand Total	612	100%

ANCESTRY BY SELECTED MANNER:

Ancestry	Accident	Homicide	Suicide
Black	1	1	1
Caucasian	187	33	72
Hispanic	1	1	3
Hispanic/Native American	1	1	
Indeterminate		1	
Mixed			1
Native American	34	13	10
Pacific Islander	1		
Grand Totals	225	50	87

OVERDOSE DEATHS BY ANCESTRY:

Ancestry	Overdose Cases	% of Total
Black	1	1%
Caucasian	83	85%
Hispanic	2	2%
Mixed	1	1%
Native American	11	11%
Grand Total	98	100%

CHILD UNDER 20 DEATHS BY ANCESTRY:

Ancestry	# of cases	% of Total
Black	1	2%
Caucasian	36	61%
Hispanic/Native American	1	2%
Indeterminate	1	2%
Mixed	2	3%
Native American	18	31%
Grand Total	59	100%

AGE RANGES OF DECEDENTS BY MANNER:

AGE	MANNER	# OF CASES	% OF 610 (HUMAN) CASES
Infants</=2 years	Accident	4	
	Homicide	3	
	Natural	3	
	Undetermined	13	
		23	4%
Child 3-12	Accident	7	
	Homicide	1	
	Natural	2	
	Undetermined	2	
		12	2%
Teen 13-19	Accident	11	
	Homicide	0	
	Natural	5	
	Suicide	6	
	Undetermined	2	
		24	4%
Adult 20-65	Accident	170	
	Homicide	41	
	Natural	151	
	Suicide	77	
	Undetermined	20	
		459	75%
Adult Senior 66+	Accident	32	
	Homicide	4	

	Research	2	
	Natural	42	
	Suicide	4	
	Undetermined	3	
		87	14%
Unknown Age	Homicide	1	
	Undetermined	4	
		5	1%

DEATHS ATTRIBUTABLE TO ALCOHOL OR DRUG INTOXICATION:

Medical Examiners performed 612 autopsies in death investigation cases. The toxicology section would have performed testing on most those cases. It was determined that 126 of those cases had toxicology results of significance. Below is a breakdown of the identified substances and corresponding drug results. The data below does not include deaths where the coroner did not have an autopsy performed.

Toxicology Related Case Breakdown by Cause of Death (Autopsied cases only)		
Cause of Death	# of cases	Comments
Acute Ethanol Intoxication	2	Mean Ethanol: 0.49 g/dL
Complications of chronic ethanol use	23	----
Acute, Single Drug Intoxication		
1. Methamphetamine	9	Mean: 8.9 mg/L / Range: 0.15-54 mg/L
2. Heroin	9	Determined by 6-monoacetylmorphine confirmation
3. Fentanyl	2	19.2 ng/mL and 14.5 ng/mL
4. Oxycodone	1	10.4 mg/L
5. Methadone	1	0.56 mg/L
6. Mitragynine	2	670 ng/mL and 830 ng/mL
7. Metoprolol	1	36 mg/L and ethanol at 0.10 g/dL
8. Lamotrigine	1	37 mg/L
9. Metaxalone	1	31 mg/L
Acute, Poly-Drug Combinations	55	<p><i>Some cases may fall into multiple categories</i></p> <p>Methamphetamine found in 18 cases (mean: 1.02 mg/L) Heroin use found in 12 cases Methamphetamine and Heroin combo in 7 cases Fentanyl found in 7 cases (mean: 12.2 ng/mL) Oxycodone found in 6 cases (mean: 0.31 mg/L) Hydrocodone found in 6 cases (mean: 0.17 mg/L) Methadone found in 4 cases (mean: 0.34 mg/L) Mitragynine found in 2 cases (mean: 725 ng/mL) Tramadol found in 8 cases (mean: 3.7 mg/L) Miscellaneous CNS depressants found in 11 cases</p>

Date



Drug and Weather Combinations	4	1. Cold water immersion in association with cocaine and alcohol use 2. Drowning associated with acute mixed drug (chlorpheniramine, dextromethorphan, ethanol) intoxication 3. Hypothermia associated with acute ethanol and marijuana intoxication 4. Hypothermia associated with acute ethanol intoxication
Carbon Monoxide Poisoning	12	10 cases greater than 50% carboxyhemoglobin
Inhalant Intoxication	2	1 case with 1,1-Difluoroethane 1 case with 1,1-Difluoroethane and butane
Ethylene glycol intoxication	1	59 mg/dL

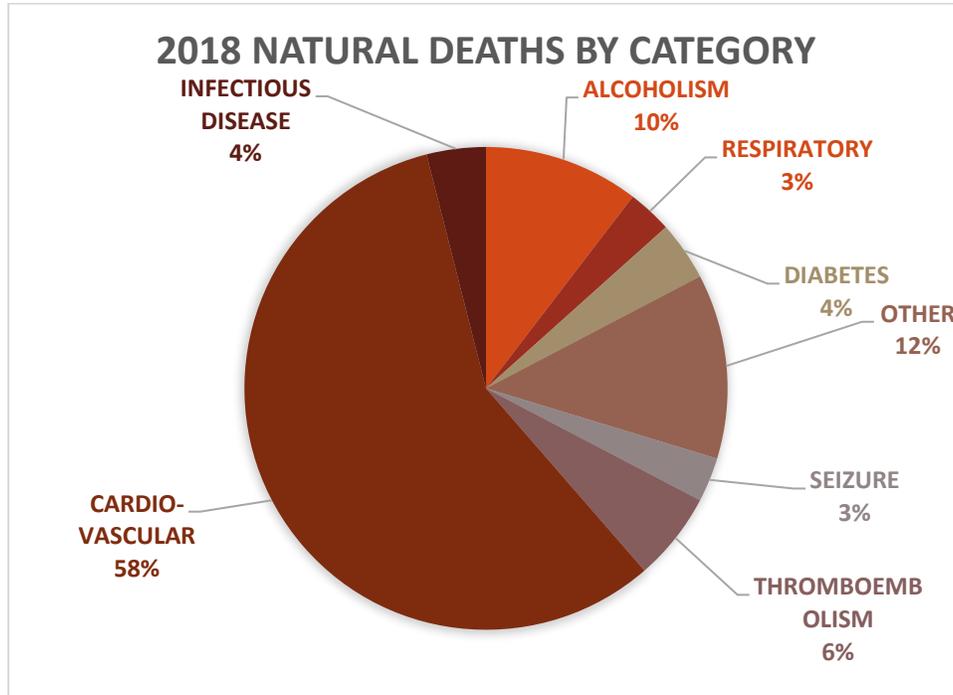
SUICIDES AND HOMICIDES ATTRIBUTABLE TO FIREARMS:

In 2018, 48% of the homicide cases, 55% of the autopsied suicides, and 13% of all casework involved a firearm.

MANNER	# OF CASES
Homicide	24
Suicide	48
Grand Total	72
% OF TOTAL CASES	13%

NATURAL DEATHS BY CATEGORY:

CATEGORY	# OF CASES
CARDIO-VASCULAR	116
OTHER	25
ALCOHOLISM	21
THROMBOEMBOLISM	12
DIABETES	8
INFECTIOUS DISEASE	8
RESPIRATORY	6
SEIZURE	6
Grand Total	202
% OF TOTAL CASES	33%



2018 TURN-AROUND TIMES

Turn-Around Time represents the number of days between the postmortem examination and the completion of the autopsy report. 84% of our reports in 2018 were completed within 90 days.

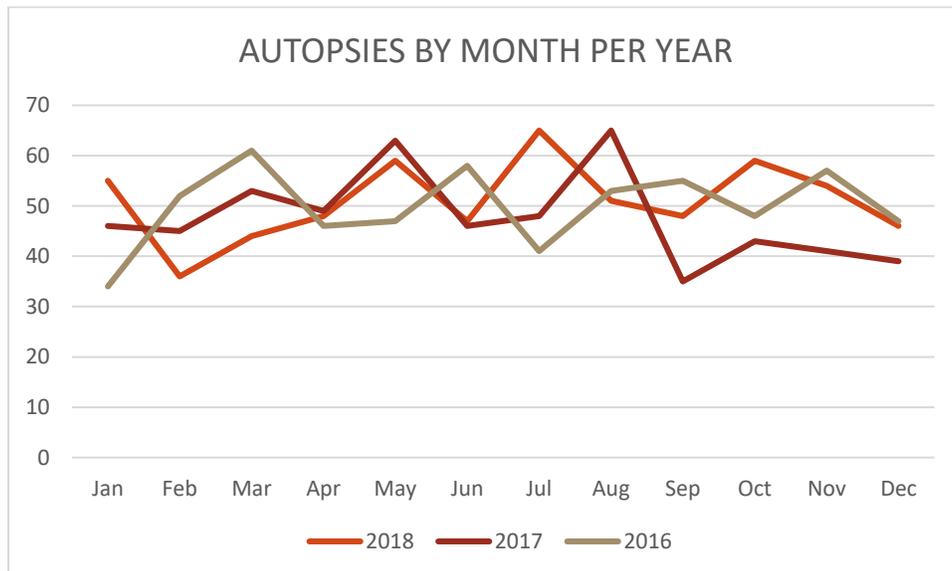
LESS THAN 60	369	60%
60-90	145	24%
91-120	47	8%
OVER 120	51	8%
TOTAL	612	100%

THREE YEAR TRENDS (2016-2018)

The Montana State Medical Examiner's office initiated a process to maintain better statistical information beginning in 2015. We have now completed 3 years with which we can make annual comparisons and watch for trends. Again, these comparisons are only based on the cases submitted to the office and not all investigated deaths in the State.

AUTOPSIES BY EXAM TYPE PER YEAR			
Type	2018	2017	2016
Full	546	530	540
Partial	18	15	12
External	37	22	37
Skeletal	8	7	10
Disinterred	0	1	0
Brain Removal	2	0	0
Coroner Case Review	1	0	0
Total Cases	612	575	599

Skeletal remains are submitted to the UM Anthropology Department for analysis.



CASES BY MONTH PER YEAR:

Month	2018	2017	2016
Jan	55	46	34
Feb	36	45	52
Mar	44	53	61
Apr	48	49	46
May	59	63	47
Jun	47	46	58
Jul	65	48	41
Aug	51	65	53
Sep	48	35	55
Oct	59	43	48
Nov	54	41	57
Dec	46	39	47
Total	612	573	599

MANNER OF DEATH BY YEAR:

MANNER	2018	2017	2016
Accident	225	205	226
Homicide	50	49	47
Research*	4	1	
Natural	202	198	197
Suicide	87	77	75
Undetermined	44	45	50
Not Applicable**			4
Grand Total	612	575	599

*Brain Removals and skeletal remains determined Non-Human

**Skeletal remains

DEATHS UNDER 20 YEARS BY MANNER:

AGE	MANNER	2018	2017	2016
Infants<+2 years	Accident	4	4	7
	Homicide	3	5	6
	Natural	3	5	5
	Undetermined	13	16	15
Child 3-12	Accident	7	3	4
	Homicide	1	0	3
	Natural	2	0	2
	Undetermined	2	0	0
	Suicide	0	0	1
Teen 13-19	Accident	11	4	12
	Homicide	0	1	3
	Natural	5	3	2
	Suicide	6	5	3
	Undetermined	2	2	0
Grand Totals		59	48	63
	variance to prior	23%	-24%	

SUICIDES BY MONTH PER YEAR:**SUICIDES PER MONTH**

Month	2018	2017	2016
Jan	4	5	4
Feb	8	8	7
Mar	3	7	8
Apr	10	4	5
May	6	11	6
Jun	12	10	3
Jul	7	4	4
Aug	7	6	9
Sep	11	3	4
Oct	7	5	2
Nov	4	9	10
Dec	8	5	13
Total	87	77	75

HOMICIDES BY MONTH PER YEAR:**HOMICIDES PER MONTH**

Month	2018	2017	2016
Jan	4	8	4
Feb	4	0	4
Mar	5	2	9
Apr	6	2	4
May	2	9	2
Jun	6	2	3
Jul	6	5	4
Aug	3	7	4
Sep	1	4	2
Oct	7	2	4
Nov	4	6	3
Dec	2	2	4
Total	50	49	47

OVERDOSE DEATHS BY MONTH PER YEAR:**OVERDOSES PER MONTH**

Month	2018	2017	2016
Jan	9	9	8
Feb	6	10	5
Mar	8	10	14
Apr	6	4	10
May	14	12	8
Jun	7	5	8
Jul	9	8	11
Aug	6	6	8
Sep	8	5	6
Oct	12	8	6
Nov	6	2	8
Dec	7	8	6
Total	98	87	98

HOMICIDE DEATHS BY COUNTY PER YEAR:

HOMICIDES BY COUNTY			
COUNTY	2018	2017	2016
Big Horn	1	6	2
Broadwater		1	0
Butte/Silverbow			4
Carter		1	
Carbon	1		4
Cascade	5	8	5
Chouteau			1
Custer	1		
Dawson		1	
Deer Lodge	1	1	1
Flathead	4	1	2
Gallatin	1	3	4
Glacier	2	3	1
Granite			1
Hill	1		1
Jefferson		1	0
Lake	2	1	1
Lewis & Clark	5	3	4
Liberty			1
Lincoln		2	2
Missoula	5	5	1
Musselshell			1
Park			2
Phillips	1		1
Pondera	1		
Ravalli		1	
Richland			1
Roosevelt	1	2	4
Rosebud	1		2
Sanders	2	1	0
Valley	1		
Yellowstone	14	8	1
Totals	50	49	47

SUICIDE DEATHS BY COUNTY PER YEAR:

SUICIDES BY COUNTY			
COUNTY	2018	2017	2016
Beaverhead	1		2
Big Horn	4	1	1
Broadwater	1		
Butte/Silver Bow		1	6
Carbon	1		
Carter		1	
Cascade	3	4	4
Chouteau			1
Custer			1
Daniels		1	1
Dawson	2		
Deer Lodge	1	3	1
Fallon			1
Fergus		1	
Flathead	4	4	3
Gallatin	3	2	2
Glacier	4	1	2
Granite	1	1	2
Hill	1	1	
Lake	7	9	6
Lewis & Clark	12	3	2
Liberty			1
Madison		1	
Mineral		1	
Missoula	8	9	11
Musselshell	3		3
Park	1	2	2
Powell	1		
Prairie		1	1
Ravalli	8	7	2
Roosevelt		2	1
Rosebud	1	1	
Sanders		2	
Stillwater	2	1	
Sweetgrass			1
Toole			3
Wheatland	1	1	
Yellowstone	17	16	15
Totals	87	77	75

Questions or inquiries regarding the information provided in this report can be addressed by contacting our main office at:

(406) 728-4970

Montana State Medical Examiner's Office
Forensic Science Division
2679 Palmer St
Missoula, MT 59808

Date

